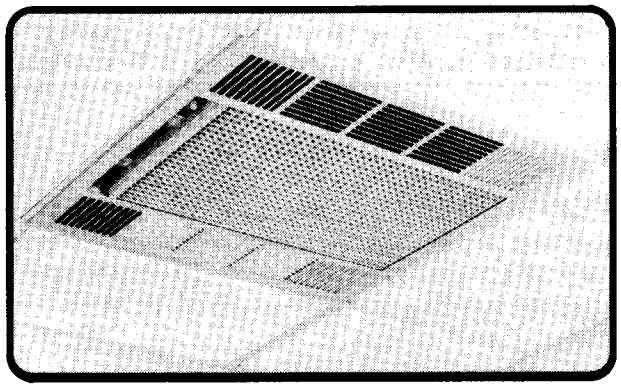
SMOKEMASTER®

OWNER AND SERVICE MANUAL



SMOKEMASTER® MODEL X-400 SELF-CONTAINED ELECTRONIC AIR CLEANER

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MADE WITH PRIDE IN THE U.S.A.

OWNER MANUAL
SMOKEMASTER PART 1

Your Smokemaster X-400 is an advanced self-contained electronic air cleaner. The model X-400 is an efficient indoor pollution fighter while reducing costly energy consumption. It is designed to be installed in the space of a 2 x 2 drop ceiling panel.

CLEAN AIR

A clean fresh atmosphere is a plus to any business. With your new Smokemaster Electronic Air Cleaner, your customers and employees can now breathe air that is relatively free of smoke, dust or pollen. This is especially important with regard to today's concern with the effects of smokers upon non-smokers and also for a more comfortable environment for allergy sufferers.

LOWER ENERGY CONSUMPTION

A common solution to the problem of dense concentrations of smoke is to exhaust. Excessive exhausting is wasteful and very expensive. One is exhausting expensively heated or cooled air and needing to heat or cool the outdoor air coming in. A Smokemaster X-400 drastically reduces the need for outside air. This means you can save as much as 40 percent on heating and cooling bills.

REDECORATING

Smoke particles also have a tendency to settle out as a dulling film on mirrors, windows, trophies, bottles and glassware. In fact, most of the particles which product soiling and staining are just too small to be removed by average dusting. Electronic air cleaning gets rid of these particles before they have a chance to start the soiling process. Less soiling means longer periods between redecorating. If the appearance of your business is important to you, electronic air cleaning is certainly a plus.

EXTRA COMFORT AND SAVINGS

The effective air pattern of the Model X-400 creates a more comfortable atmosphere by constant slight air movement. This slight movement also helps to eliminate existing drafts. Another side benefit of the air recirculation pattern is that it distributes the heated or cooled air more evenly. This even distribution helps to reduce the amount of heated or cooled air needed for the same degree of warmth or cool.

LOW OPERATING COST

In addition to reduced heating/cooling bills and redecorating bills, the relatively low cost of maintaining an X-400 electronic air cleaner is another financial boost to your business, this air cleaner has no throwaway filter or other parts that must be periodically replaced. The durable electronic cells and prefilter screens are washed and used over and over again. No replacement parts means reduced maintenance cost.

COMPONENTS

COMPONENTS OF THE X-400 ELECTRONIC AIR CLEANER

Cabinet

The sturdy corrosion resistant steel cabinet requires only 13-9/16" space above drop ceiling for installation.

Mounting System

Specially designed support bars simplify installation - makes mounting of air cleaner safe and secure even during installation.

Power Supply

Solid state power supply assures trouble-free, highly reliable service.

Grille

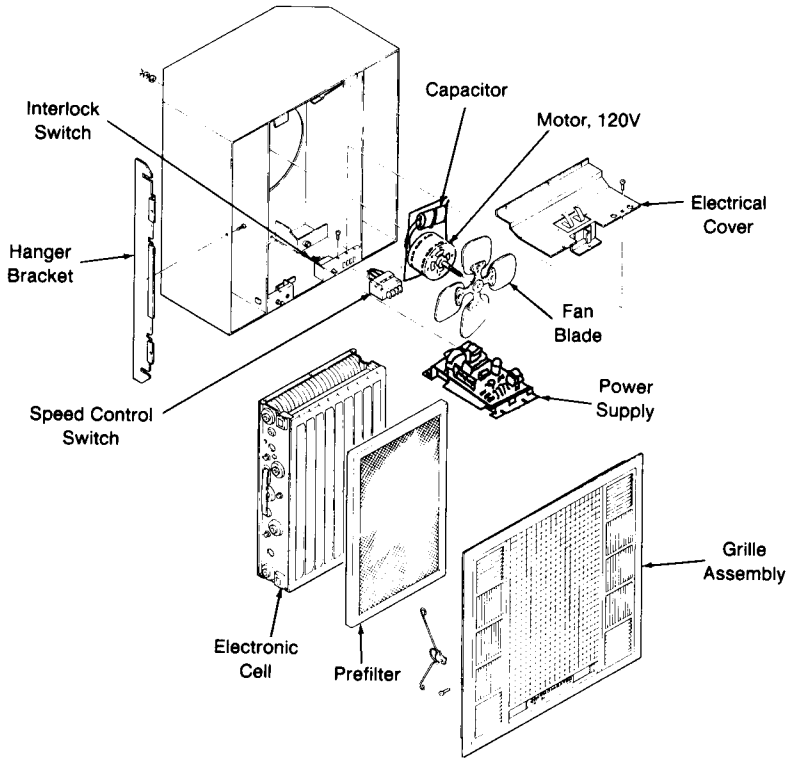
Attractive one-piece grille conveniently drops down. All serviceable components are accessible through the grille opening.

Electronic Cells

One electronic cell charges and collects airborne particles. The compact design allows easy removal for cleaning and service.

Fan Motor

Motor driven fan operates at 3 speeds providing the choice of circulation level. Elastomeric suspension system eliminates vibration noise.

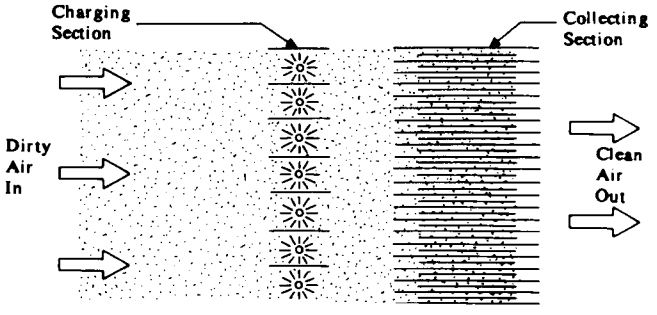


PRINCIPLES OF OPERATION

HOW YOUR ELECTRONIC AIR CLEANER WORKS

Airborne contaminants are trapped by a process called "Electrostatic Precipitation." The fan draws particulate laden air successively through the prefilter, the cell ionizing section and cell collector section. The ionizing section imparts an electrical charge to the individual particles which are then drawn by electrostatic forces to the oppositely charged collector plates. Cleaned air is then discharged back into the room.

Electronic cells must be washed periodically to maintain efficient performance.



OPERATING INSTRUCTIONS

SAFETY INTERLOCK SYSTEM

In order for all air cleaner functions to receive operating power the grille must be securely in position. This actuates the safety inter-lock switch. Air cleaner will not function without grille in place.

FAN SWITCH

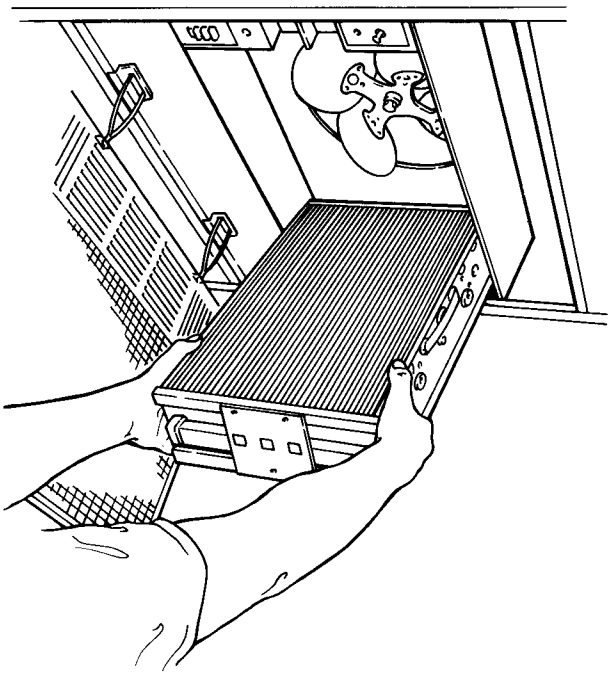
Your electronic air cleaner has an Off-Low-Med-Hi switch. The electronic collection system and built-in fan are designed to run simultaneously. Turn off the air cleaner before dropping the grille to remove the electronic cells for cleaning.

SYSTEM LIGHT

Your electronic air cleaner is equipped to tell you simply and quickly that it is working properly. The amber system light tells you at a glance the status of the power supply. The system light should be on when the unit is on.

TEST BUTTON

Pushing the white button labeled "push to test" generates a snapping noise which indicates proper function of collector system.



MAINTENANCE

WASHING THE ELECTRONIC CELL AND PREFILTER

To maintain peak efficiency, the electronic cells and prefilter in your electronic air cleaner must be washed regularly. The washing is necessary to remove dirt particles collected from the air. Check with your Air Quality Engineering representative to determine how often your cells need to be washed for your particular application. Grille may be removed from machine for periodic washing.

CAUTION

1. Be extremely careful when working with X400 cell and filter. The edges of the cells and filter, and the collection plates and ionizing wires of the cell may be sharp.

2. When cleaning the cells and filters, be sure to wear appropriate protective gear, especially goggles and gloves. Skin contact with either alkaline or acid detergent solution should be avoided.

3. Use a stable platform to stand on when working with the electronic air cleaner.

4. Electronic air cleaners and their components are susceptible to damage. Take care when working with them to avoid equipment damage.

1. Fill wash tub with cell cleaning detergent and hot water per detergent manufacturer's instructions.

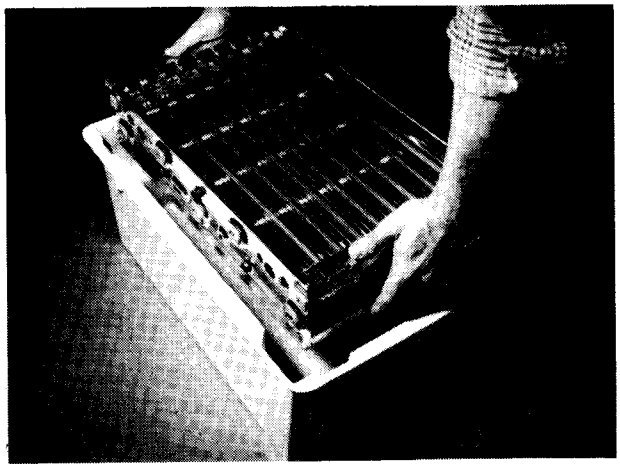
2. Immerse cells in CLEANER and remove immediately.

3. Remove cells and set aside for five minutes to allow CLEANER to penetrate.

4. Rinse cells well with hot water. Make certain no residue remains on cells. Residue will adversely affect cell performance by causing frequent arcing and low efficiency.

5. Inspect cells for broken wires or bent plates. Repair or replace as necessary. (See Service Section for ionizer wire replacement procedure.)

6. Remove lint from prefilter with vacuum cleaner or wash with mild detergent solution.



SERVICE

In the event of air cleaner malfunction there are some simple checks you can perform to determine if a serviceman must be called.

1. Check circuit fuse or breaker. Correct if fuse is blown or breaker is tripped.

2. Be sure electronic cell is in place, intake grille is closed and unit is turned on.

If the problem persists, call serviceman. The following information will be useful to him.

1. Whether or not amber system light is on.

2. If pushing white test button results in a snapping sound.

ARCING

From time to time you may hear a snapping noise coming from the electronic air cleaner. This arcing occurs when the air cleaner collects an unusually large particle, when cell is wet, extraordinarily dirty or damaged.

If an unusual amount of arcing persists, check first to determine if the electronic cell needs washing. Look also for any sign of bent collector plates or broken ionizer wires.

If arcing still occurs when cell is clean and dry, consult your serviceman or dealer for repair.

INSTALLATION AND SERVICE
SMOKEMASTER
PART 2

SPECIFICATIONS

Model X-400 includes one electronic cell and a 3-speed fan. Discharges air in up to four directions parallel to ceiling upon which it is mounted.

CAPACITY:

FAN SPEED	60 Hz / 50 Hz		
	CFM	M^3/h	EFF
High	400	680	94%
Medium	275	460	96%
Low	175	300	97%

ELECTRICAL RATINGS:
Voltage and Frequency - 120 Vac, 60 Hz;
220/240 Vac, 50 Hz

CURRENT AND POWER CONSUMPTION:

FAN SPEED	120 Vac, 60 Hz		220/240 Vac, 50 Hz	
	Watts	Amps	Watts	Amps
High	80	.8	150	.7
Medium	65	.6	110	.5
Low	50	.4	99	.45

DIMENSIONS: 24" x 24" x 13 5/8"

EFFICIENCY: Up to 97 percent efficiency is delivered as measured according to the NBS Dust Spot Method using atmospheric dust as outlined in the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 52-76.

WEIGHT: 54 lbs. (25 kg) shipping, 44 lbs. (20 kg) installed, including electronic cells. Each cell weighs 9 1/2 lbs. (4.3 kg).

AMBIENT TEMPERATURE RATING:
Shipping and Storage: -40 to +150 degrees F.
Operating: +40 to +125 degrees F.

UNDERWRITERS LABORATORIES INC., LISTED:
File No. E55711, Guide No. AGGZ
(60 Hz models only)

CANADIAN STANDARDS LISTED:
File No. LR89416-1

GENERAL INFORMATION

APPLICATION

The X-400 is mounted in the room or area where the air is to be cleaned. One very common application is the removal of tobacco smoke from the air. Typical installations include conference rooms, lounges, offices, lunchrooms, etc.

Because it provides its own circulation, the X-400 may be used in almost any application requiring the removal of airborne particulate contamination from an enclosed space.

WARNING

The X-400 Electronic Air Cleaner is not explosion proof. It must not be installed where there is danger of vapor, gas, or dust explosion.

MAKE-UP AIR

Recommended quantities of clean outdoor ventilation air for various applications are described in Table 2 of the ASHRAE Standard 62-89 "Ventilation for Acceptable Indoor Air Quality." ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., Phone #404-636-8400) notes that these recommended outdoor air quantities may be reduced by the use of clean, recirculated air if the IAQ Procedure 6.2 is used. Appendix E of ASHRAE 62-89 includes recommendations for the use of clean recirculated air. However, in most cases, adequate control of carbon dioxide generally requires a minimum clean outdoor air quantity of no less than 15 cubic feet of air per minute per person.

Additional ventilation may be required for toxic contaminants. In any event, the air cleaner must be used only in areas which are ventilated for human occupancy in order to disipate any incidental generation of ozone.

SIZING

Electronic air cleaners are generally best sized according to the use of the area and the volume of the room (Air Changes per Hour Method).

Secondary factors to consider in applying electronic air cleaners include:
-type of contamination
-number of occupants
-outside air quality
-anticipated fan setting
-rate of contaminate generation

By considering these factors, the number of air cleaners required can be adjusted up or down to account for abnormalities in operating conditions.

Follow Steps 1 through 4 below to determine the number of air cleaners required:

Step 1 - Measure the length, width, and height of the room in feet.
Step 2 - Determine the Air Changes per Hour required. See Chart A below.
Step 3 - Determine the C.F.M. (Cubic Feet per Minute of Air). See Chart B below.
Step 4 - Plug the figures from Steps 1-3 into the sizing formula below and calculate the number of air cleaners required.

CHART A - AIR CHANGES PER HOUR

Load	Description of Application	Air Changes per Hour
Light	General offices & computer rooms	4-5
Average	Conference and break rooms	6
Heavy	Designated smoking areas, bingo halls, bars, & extra smoky areas.	8-10

CHART B - CUBIC FEET OF AIR PER MINUTE

The air cleaner has a three-speed fan motor. Use the C.F.M. that corresponds to the speed that the air cleaner will operate on normally. Low speed where noise is a prime concern and high speed where noise is not a factor.

Model X-400	Low	Medium	High
C.F.M.	175	275	400
Noise Level	45 dB(A)	50.5 dB(A)	56.5 dB(A)

SIZING FORMULA

$$\frac{\text{L x W x H of Room x Air Changes / Hr.}}{\text{C.F.M. of Air (see Chart B) x 60 Min.}} = \text{\# of X-400's}$$

NOTE: The maintenance interval for cell cleaning can be lengthened by increasing the number of air cleaners beyond the required number.

INSTALLATION

IMPORTANT! Read these instructions carefully. A hazardous condition or damage to product could result if instructions are not followed.

CAUTION

1. Do not connect power source until after the electronic air cleaner is mounted. Electrical shock and equipment damage may result.

2. Be sure to turn air cleaner off prior to service or installation. Motor has automatic thermal overload so it will stop when overheated. It will automatically start after a cooling period.

3. Avoid electrical shock by being careful when air cleaner is turned on for electrical check. Also, be careful when working near air cleaner's moving parts.

4. Wear gloves when installing air cleaner to protect hands from cuts.

EQUIPMENT NEEDED

1. Phillips screwdriver
2. Wire cutters
3. Pliers
4. Knife
5. Hacksaw
6. Electric drill (with 1/8" bit)
7. Wire Pliers
8. Four 1/4 inch turnbuckles from your local hardware store.
9. Twelve gauge galvanized steel wire (enough to hang four wires from true ceiling to T-bar level).
10. Enough twelve or fourteen gauge electrical wire and conduit to reach nearest unswitched circuit (see electrical installation instructions).
11. Junction box fittings as needed.

ITEMS SUPPLIED AS LOOSE PARTS

1. Two support bars
2. Six #8 self-tapping sheet metal screws
3. Two flat washers
4. Two wire connectors

UNPACKING

Note: It is easier to leave air cleaner in box until Step 5.

1. Remove grille and unpack from protective cardboard.
2. Take out prefilter
3. Remove electronic cell by turning the retaining turnstile latch. Then raise cell off hooks.
4. Remove mounting bars from inside of cabinet.
5. Lift air cleaner out of box.

PREPARATION

The model X-400 air cleaner is designed to be installed within a T-bar drop ceiling. Remove tiles from ceiling to open an area 23 inches (one 2' x 2' ceiling tile) to accommodate air cleaner. The area between the drop ceiling and true ceiling must be free of obstructions such as pipes, ducts, etc. There must be at least 14 inches between the bottom of the T-bar and true ceiling.

Make sure air cleaner will be oriented and located for good air circulation.

MOUNTING

WARNING

Air cleaner could fall from ceiling if improperly mounted. Installation instructions must be followed carefully to avoid injury to people and damage to equipment.

1. Attach four 12 gauge galvanized steel support wires to true ceiling at location shown in Fig. 1. Twist each wire at least four times to provide safe support for the air cleaner. The free end of each wire should extend six inches or more below the bottom of the T-bars.

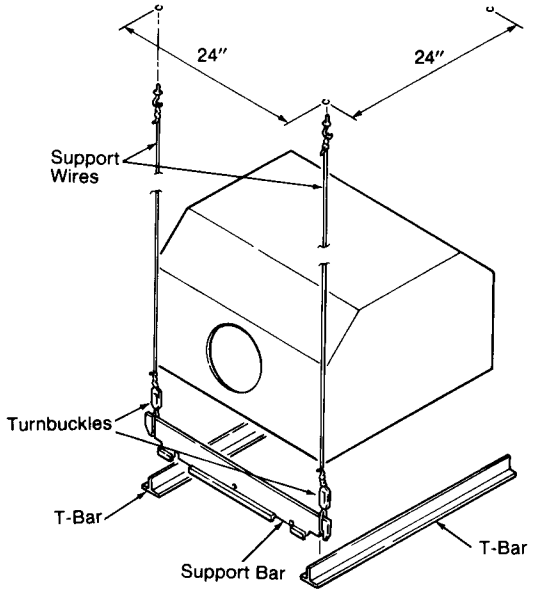


FIGURE 1

2. At the end of each opening, set a support bar across the T-bars. The "J" shaped portion of the support bars should be oriented so the hook side of the "J" is toward the opening (not toward the adjacent T-bars). See Fig. 1.
3. Using an electric drill with and 1/8" drill bit, drill through the holes in the stepped portion of the support bars and through the T-bars. Attach the support bars to the T-bars with four #8 sheet metal screws provided.

4. Hook the turnbuckles to the support bars and then secure the support wires to the eyes of the turnbuckles (see Fig. 1). Twist the wire at least four times.

5. Adjust the turnbuckles until the support bars are securely suspended by the support wires. Do not overtighten the turnbuckles to avoid lifting or buckling the T-bar framework.

6. Lift air cleaner body into opening and let body drop into J shaped portion of support bars.

7. Fasten air cleaner body to support bars using two #8 self-tapping screws and flat washers. Screws are installed through slots in ends of air cleaner into support bars. Adjust location of air cleaner relative to support bars via slots prior to tightening of screws.

ELECTRICAL INSTALLATION

CAUTION

This procedure should be attempted only by persons qualified to install electrical wiring. All wiring must comply with applicable codes and ordinances.

1. Locate an unswitched 120 volt AC, 60 Hz. power circuit with a junction box near the air cleaner location.

2. Check the circuit breaker or fuse for that circuit and determine whether it is rated 15 amperes or 20 amperes (as marked on the device). The required copper wire size will be:

AWG #14 for 15 ampere circuits.
AWG #12 for 20 ampere circuits.

3. CAUTION: Turn off the building circuit at the fuse or circuit breaker before proceeding.

4. Connect the black and white wires from the pigtails in the air cleaner junction box to the corresponding colors in the supply circuit (Fig. 2).

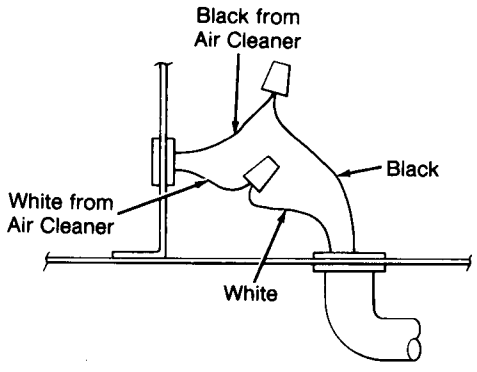
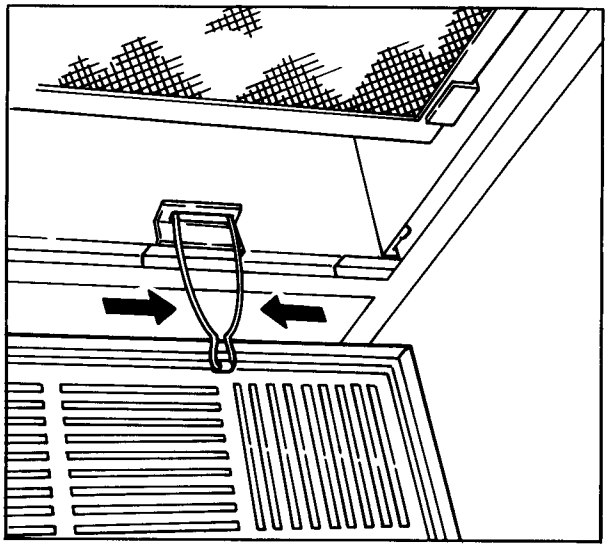


FIGURE 2

5. If grounded conduit is used to route the power wiring to the air cleaner, no further grounding is necessary. In the absence of a grounded conduit connection, the green wire in the field wiring compartment should be connected to a grounded conductor. DO NOT connect the grounding wire from the air cleaner to the white wire or the building. The air cleaner frame must be electrically connected to the frame of the building of the electrical conduit system. Input electrical power should be run through flexible conduit as recommended by the National Electrical Code or your local authority.



COMPLETING THE ASSEMBLY

1. Install electronic cell.

2. Check to make sure the electronic cell is oriented for correct airflow. arrows on side of cell should point up. The contact board needs to be properly seated.

3. Install the prefilter.

4. Install the grille by squeezing two of the mounting springs located along one side of the grille and inserting the "legs" of the springs into the slots in the mounting bars. Be sure the grille is oriented so it will swing up and cover the air cleaner correctly. Swing the grille up and attach the remaining two springs to the other mounting bar. At this point, simply push the grille toward the air cleaner and the springs will pull the grille up into its final position.

5. Turn electric power back on and press HI, MED, LO button.

6. Make sure fan runs on all three speed settings.

7. Press test button. An audible snap indicates collection section of cell is functioning.

8. Clean up installation area.

CHECKOUT

Before leaving installation, be sure the X-400 is properly installed and operates correctly. Check the following:

MOUNTING

- The X-400 is securely fastened to the true ceiling.

ASSEMBLY

- Electronic cell is correctly oriented-airflow arrows pointing toward blower.
- Prefilter screen properly installed.

OPERATION

- Fan runs correctly on all speed settings.
- System light turns on when fan is running.
- Snapping noise is heard when test button is pushed.
- Opening intake grille stops fan and turns out system light.

NOTE: If the X-400 does not appear to work right, refer to ELECTRICAL TROUBLESHOOTING.

CLEANUP

- Clean the surfaces of the air cleaner.
- Clean up the installation area.

SERVICE

WARNING!

The following instructions are intended for qualified service personnel only. Dangerous line voltage circuits are exposed during this procedure. Disconnect power at fuse before servicing unit.

MOTOR REPLACEMENT PROCEDURE

1. Disconnect power at fuse or circuit breaker.
2. Open grille. Remove prefilter and cell to provide access to motor.
3. Remove fan blade from motor.
4. Disconnect fan motor leads at plug disconnect near electrical compartment.
5. Remove 5 screws holding motor to unit to remove motor.
6. Install new motor, connect electrical lines and replace fan, cell, prefilter and grille.
7. Connect power and check new motor operation.

POWER SUPPLY REPLACEMENT PROCEDURE

1. Disconnect power at fuse or circuit breaker.
2. Open service grille and remove prefilter and cell.
3. Remove six Phillips head screws holding the electrical cover in place. Disconnect the two high voltage wires from the back of the cell contact board assembly and lay the electrical cover aside.
4. Disconnect:
    1. White wire from power supply.
    2. Black Wire from power supply.
    3. Charcoal and pink high voltage wires (one each) at power supply.
5. Cut wire ties holding the above wires to the air cleaner.
6. Remove 4 screws holding power supply in place and remove power supply.
7. Mount new power supply in place reconnect wiring.
8. Use wire ties and re-tie wires in place.
9. Reconnect the high voltage wires and reinstall the electrical cover.
10. Replace the electronic cell and prefilter.
11. Close service grille.
12. Reconnect power and test power supply with test button to be sure unit is operating properly.

IONIZING WIRE REPLACEMENT

The fine tungsten ionizing wires in the charging section of the electronic cell may break or become damaged. Inspect the cell from the upstream side after washing to make sure that none of the wires are broken or out of position. During operation, a broken or deformed wire generally causes a short to ground, possibly with visible arcing or sparking. This condition, or any other short in the ionizing section of the cell, will cause the indicator light to go out.

Broken wires must be replaced for air cleaner to function effectively without arcing. Remove all parts of the broken wire. If necessary, the cell may be temporarily used with one wire missing. See PARTS LIST for part number of replacement wire. Wires come cut to length with eyelets at each end for easy installation in the electronic cell.

1. Use care to avoid damage to the spring connector or other parts of the cell during the installation.
2. Hook one end of the ionizing wire over the spring connector at one end of the cell.
3. Hold the opposite eyelet with a needlenose pliers and stretch the wire the length of the cell. Depress the opposite spring connector and hook the eyelet over it.

MOTOR MAINTENANCE PROCEDURE

The manufacturer of the motor used in the X-400 recommends oiling of the motor at least once a year. The following procedure can be followed:

*De-energize the unit.

*Remove the prefilter and cells from the cabinet.

*Remove the fan blade from the motor shaft.

*Unscrew the four nuts holding the motor and lower the motor. THE WIRING NEED NOT BE DISCONNECTED.

*There are two oil holes on the motor:

1. Near the motor shaft.
2. On the end opposite the motor shaft near the bearing plate.

Five drops of SAE 20 weight non-detergent oil or electric motor oil in each hole is adequate.

Wipe of excess oil which misses or runs out of the oil holds.

Replace motor, fan blade, cell and prefilter in the unit.

Re-energize and check out to ensure proper operation.

ELECTRICAL TROUBLESHOOTING

WARNING

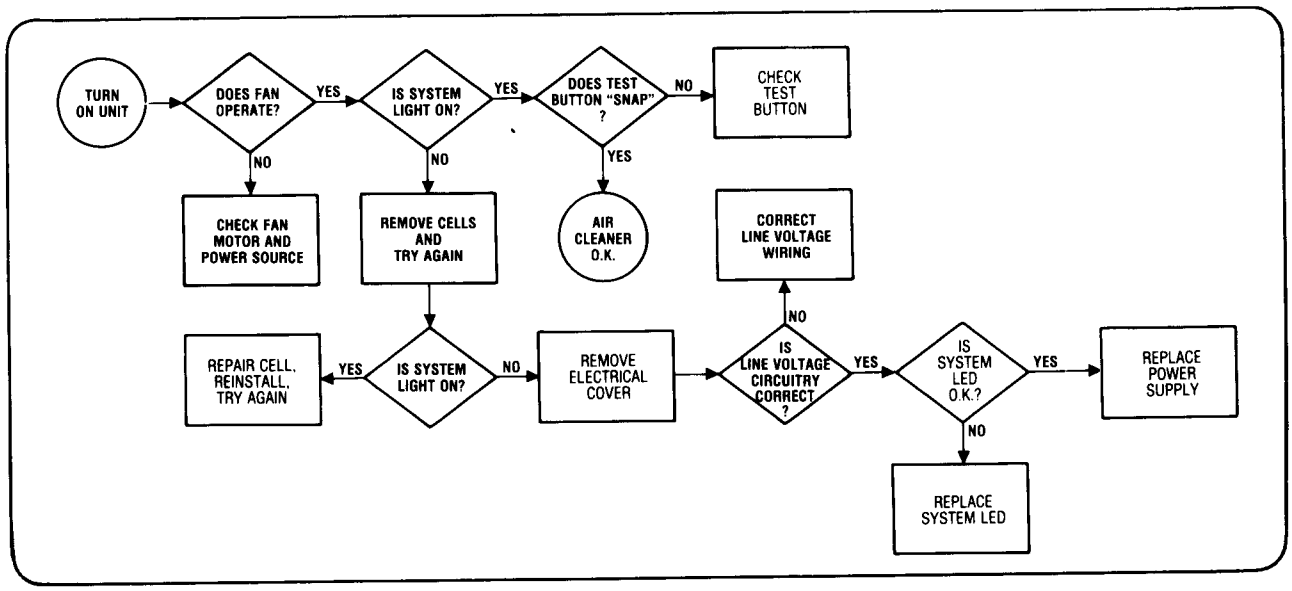
The following instructions are intended for qualified service personnel only. Dangerous line voltage circuits are exposed during this procedure.

TROUBLESHOOTING PROCEDURE

The following troubleshooting procedure has been designed to speed the serviceman's work and insure that any malfunction in the electronic air cleaner is quickly detected and properly repaired.

Most of the troubleshooting steps can be performed by observing the indicator light. This light is ON whenever the high voltage transformer is working properly.

This procedure is outlined in the flow chart below. A complete description is provided on the following pages.



The trouble shooting procedure description is divided into two sections:

1. DIAGNOSTIC CHECKS - Follow the sequence of checks in the troubleshooting flow chart to locate the cause of a failure within the air cleaner.

2. COMPONENT CHECKS - Explains how to locate a faulty component within an assembly, or how to prove a component good or bad.

TOOLS AND EQUIPMENT

Troubleshooting the X-400 can be accomplished with only a few tools.

- Screwdrivers - long shank, plastic or rubber handles; 2 required for some arc checks.
- Needlenose pliers - for stringing ionizing wires.
- Test Meter - Honeywell W869 Electronic Air Cleaner Test Meter, or Simpson 260 with 25k Vdc probe.
- Soldering iron for replacing components.
- Neon test lamp for line voltage.

DIAGNOSTIC CHECKS

1. ENERGIZE ELECTRONIC AIR CLEANER

a. Be sure that the electronic cells and prefilter screens are clean, dry and properly installed in the air cleaner.

b. Energize the air cleaner and check for operation in all fan speeds. In each case the fan should run and the SYSTEM light should turn on.

-If the fan does not run, check the fan motor, power source, and interlock safety switch.

-If the SYSTEM light does not come on, go to step 3.

-If the fan runs and the SYSTEM light comes on, go to step 2.

2. CHECK COLLECTOR OUTPUT

a. With air cleaner turned on, push TEST BUTTON to momentarily short out the collector section of the electronic cell.

b. Arcing indicates that the electronic air cleaner is working properly.

c. If no arcing noise is heard, check for a failure in the electronic cell or cell contact board.

3. REMOVE CELLS

a. Turn off the air cleaner.

b. Open the service grille. Remove the electronic cells. Close the grille.

c. Turn the air cleaner ON. -If the light comes on now, check the electronic cells for a short circuit. -If the light remains off, go to step 4.

4. CHECK POWER SUPPLY AND INDICATOR LAMP

a. Remove electrical cover.

b. Use a neon test light or a voltmeter to check line voltage on the power supply.

-If the correct line voltage is present, continue the checkout.

-If the correct line voltage is not measured on the power supply, check backwards through the switch and wiring to the power source until the problem can be located and corrected.

c. Check the voltage indicator light.

-If the voltage is correct (about 120Vac) and if the light is out, replace the assembly.

-If there is no voltage, replace the power supply.

USE AN OHMMETER TO CHECK THE ELECTRONIC CELLS FOR SHORT CIRCUITS

COMPONENT CHECKS

CHECK FAN MOTOR AND POWER SOURCE

-If the fan does not run when the switch is in HIGH, MEDIUM and LOW positions, check voltage supplied to the motor.

1. If the motor does not turn with the correct voltage applied, check to see that the shaft is free to turn. Replace the motor if necessary.

2. If the correct line voltage is not measured check back through the wiring to the power source, including interlock safety switch.

CHECK ELECTRONIC CELLS

VISUAL INSPECTION

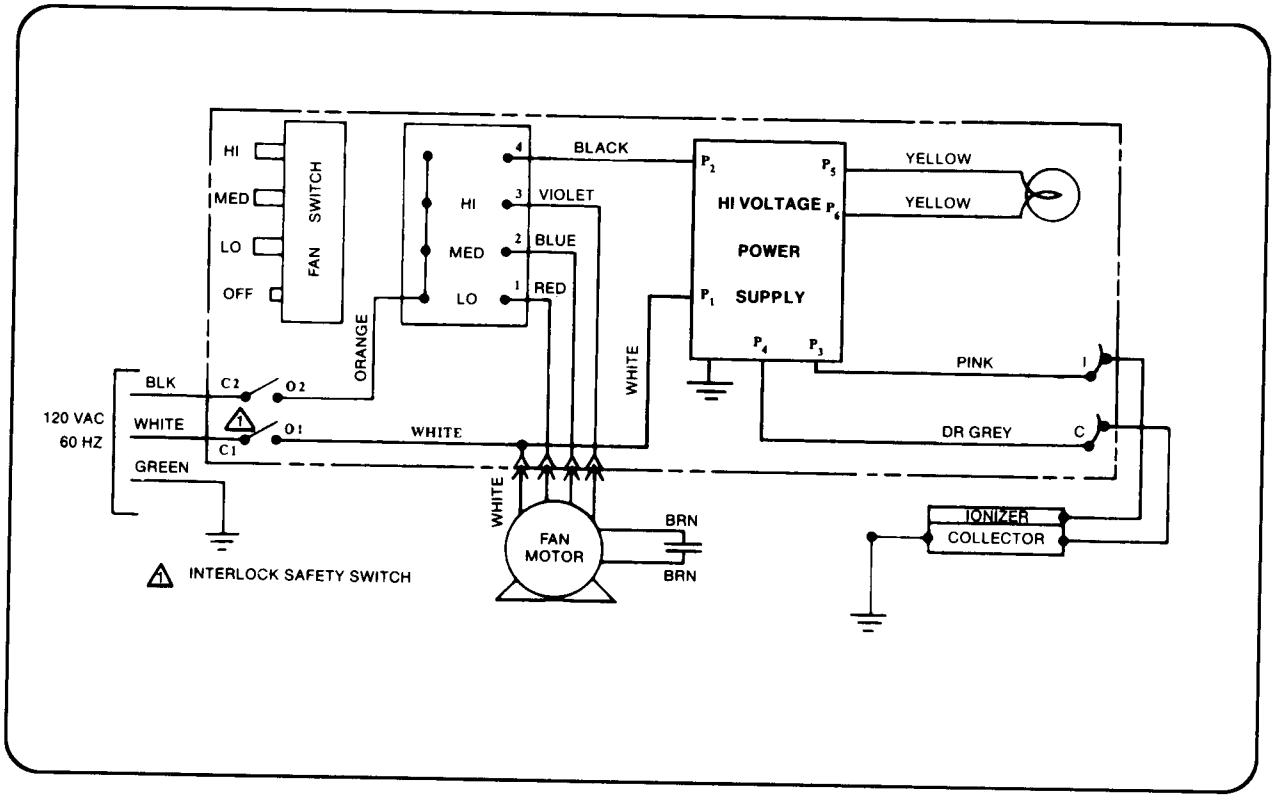
Carefully examine the electronic cell. Carefully look for--

-Bent collector plates
-Broken ionizing wires.
-Dirt accumulation on insulators.
-Contact tabs
-Ionizer and collector damage

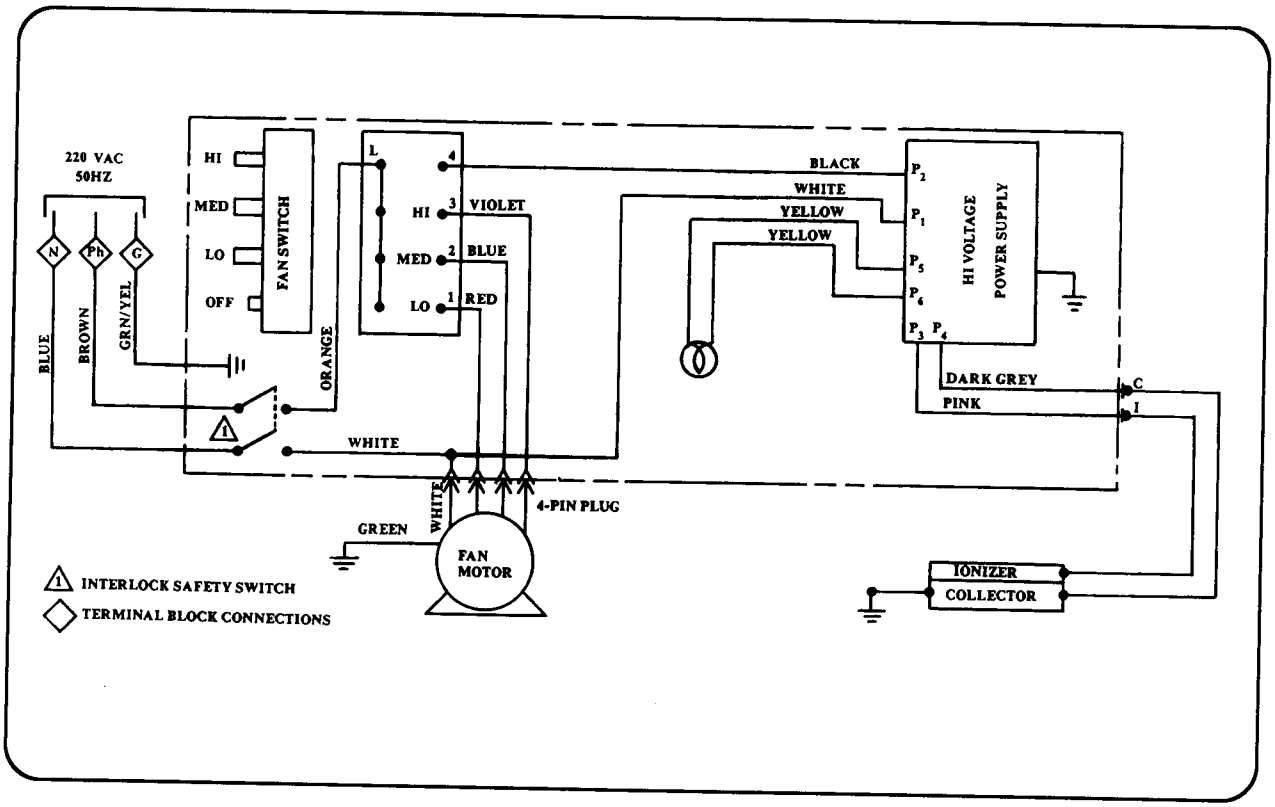
CHECK FOR SHORT CIRCUITS

Use an ohmmeter to check resistance between the outside frame of the cell and both the ionizer and collector contacts. In each case, the resistance should be infinite (open circuit).

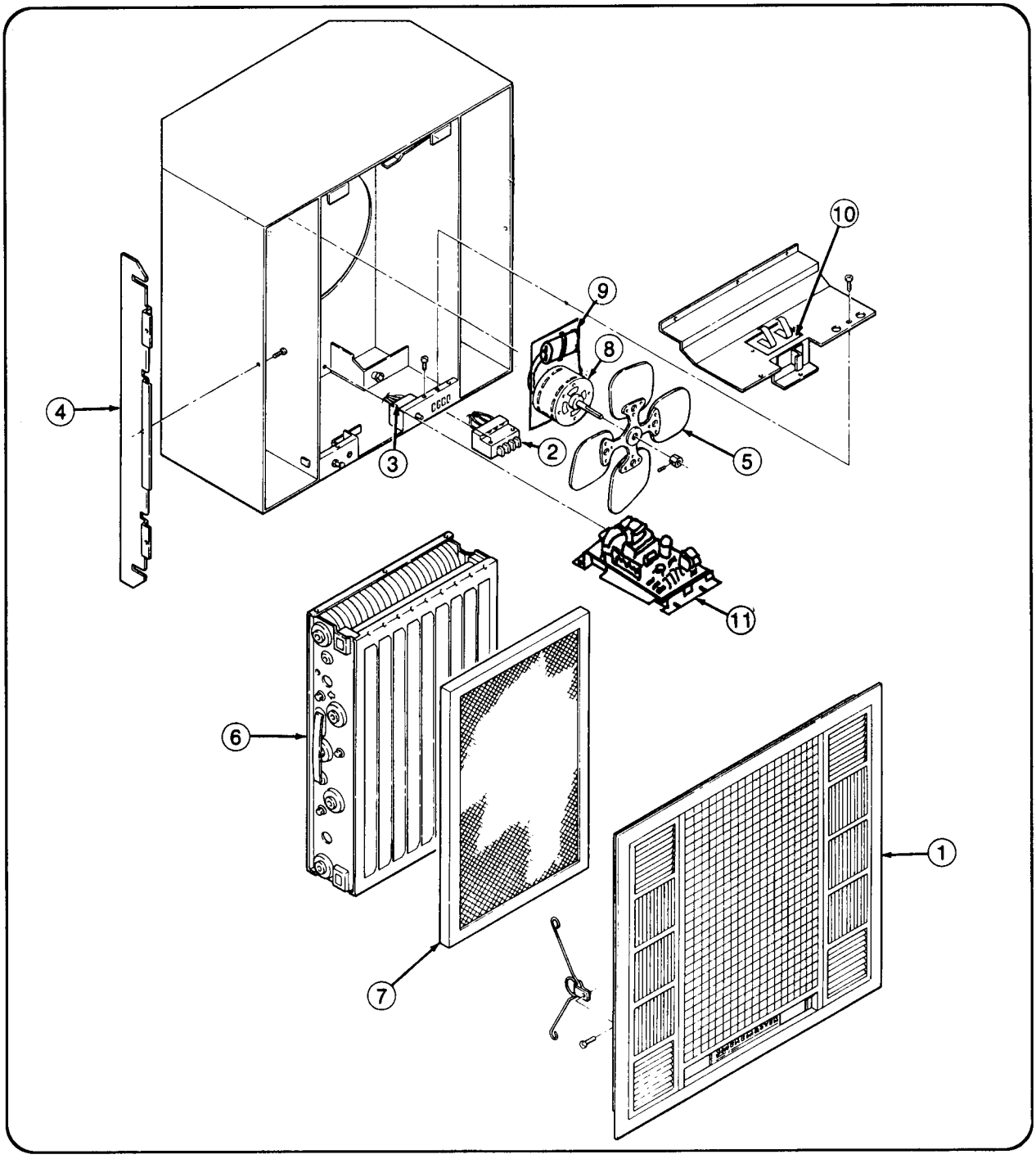
X-400 SCHEMATIC



120 VAC, 60 HZ



220-240 VAC, 50 HZ



NO.	DESCRIPTION	PART NO. 60 HZ	PART NO. 50 HZ
1	Grille Assembly	05298	05298
2	Speed Control Switch	10110	10110
3	Interlock Switch	10106	10203
4	Hanger Bracket	21118	21118
5	Fan Blade	37023	37024
6	Electronic Cell	38001	38001
7	Prefilter	41050	41050
8	Motor Assembly	07061	07102
9	Capacitor (60 Hz only)	40117	N/A
10	Contact Board Assembly	05110	05110
11	Power Supply	07099	07106

PARTS NOT ILLUSTRATED	PART NO.
Ionizer Wire	38004
Carbon Filters	41051

ACCESSORIES	PART NO.
Wash Container w/Lid	30182
Cell Cleaner Concentrate	45008
Remote Control	07060

GUIDE SPECIFICATIONS

MODEL X-400

Scope:

The following describes a self-contained electronic air cleaning device to be installed in a 2 x 2 foot ceiling tile opening.

Description:

1. Unit shall operate from two wire 120 volt, 60 Hz. power source, drawing no more than 0.8 amperes.

2. Provision for ground wire connection in field wiring compartment shall be made.

3. Fan motor shall be of PSC design and capable of running at three distinct speeds: hi, med and lo.

4. Air discharge from grille shall be in four different directions.

5. The unit shall not protrude below T-bar ceiling system.

6. Atmospheric dust spot efficiency shall be 88% minimum when tested according to ASHRAE Standard 52-76, and up to 97% efficient on lo speed.

7. Unit shall incorporate bell-mouthed fan orifice and rubber hubbed fan blade for purposes of quieter operation.

8. Built in interlock switch system shall disconnect power from all functions when service grille is opened.

9. Airflow on Hi fan speed shall be a minimum of 400 cfm.

10. Unit shall include 1" metal mesh prefilter.

11. Fan motor to be mounted on four elastomeric vibration isolators.

12. Unit shall have a flanged grille lapping over T-bars to correct T-bar misalignment.

13. Unit shall have a test button and system light to indicate proper operation of high voltage power system.

14. Unit shall provide over 8,000 volts to ionizer section and over 4,000 volts to collector section of cell.

15. Unit shall have hanger bar system to provide safe and secure installation of air cleaner.

16. Design of air cleaner shall limit production of noxious ozone to within OSHA approved levels.

17. High voltage power supply design shall limit short circuited output current to less than 5 mA.

18. Unit shall have a total electronic cell plate area of at least 52.9 square feet.

19. Unit shall be listed by Underwriters Laboratories for use as an electrostatic air cleaner.

AIR QUALITY ENGINEERING

AIR QUALITY ENGINEERING, INC.
3340 WINPARK DRIVE
MINNEAPOLIS, MINNESOTA
55427-2083

TELEPHONE: (612) 544-4426

TELEX: 29-1013 OFFICENTR SLPK

MANUFACTURER & WORLDWIDE DISTRIBUTOR OF AIR CLEANING SYSTEMS

CERTIFICATE OF WARRANTY

LIMITED ONE YEAR SMOKEMASTER WARRANTY

Air Quality Engineering, Inc. warrants the Smokemaster Electronic Air Cleaners to be free from defects in workmanship or materials, under normal use and service, for a period of one (1) year from the date of purchase by the consumer. If, at any time during the warranty period, the product is defective or malfunctions, Air Quality Engineering, Inc. shall repair or replace it (at Air Quality Engineering's option) within a reasonable period of time.

If the product is defective,

(i) return the unit or defective component with a bill of sale or other dated proof of purchase, to the retailer from which you purchased it, or

(ii) package the unit or component, along with proof of purchase (including date purchased) and a short description of the malfunction, and mail or ship, postage or freight prepaid, to the following address:

AIR QUALITY ENGINEERING, INC. Customer Service, 3340 Winpark Dr., Minneapolis, MN 55427

The repaired or replaced part or unit will be shipped by Air Quality Engineering, Inc. to the purchaser, freight collect, with the purchaser to be responsible for all freight charges. The warranty on any repaired or replacement part shall be for a duration of time no longer than the remaining or unexpired term of the original warranty. This warranty does not cover any labor or other service charges incurred by the purchaser.

This warranty shall not apply if it is shown by Air Quality Engineering that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

Air Quality Engineering's sole responsibilty shall be to repair or replace the product within the terms stated above. AIR QUALITY ENGINEERING SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED, APPLICABLE TO THIS PRODUCT. Some states do not allow the exclusion or limitation of consequential damages, so this limitation may not apply to you.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND THE WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED BEYOND THE ONE YEAR DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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51412 Rev. A

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